

AppIn No. 10/614,395
Reply to Office action of September 25, 2007

Amendments to the Specification:

Please amend paragraph [0050] as follows:

[0050] The regulator assembly 12 is usually a dual or two-stage regulator including a first stage regulator member 32 and a second stage regulator member 33. The first stage regulator member 32 is detachably secured to the opening 22 of the tank valve 16 and is designed to reduce the gas pressure from the tank 14 from a pressure in the range of approximately 3,000 to 5,000 psi to an intermediate gas pressure of approximately 140 psi. The intermediate pressure gas passes through a hose 36 to the second stage regulator member 33, wherein the gas pressure is further reduced to an ambient pressure that depends upon the depth of the scuba diver. In this manner, the diver can readily breathe the gas from the second stage regulator member 33 at any depth. A second hose 226 also connects to the first stage regulator.

Please amend paragraph [0071] as follows:

[0071] Referring to FIGS. 12 and 13, in certain embodiments, the barrier 124, 24 comprises a membrane with a pinhole 157, 57. As in the previous embodiment, the pinhole 157, 57 prevents water and contaminants from entering into the passageway 130 of the gas valve 120, 20 when the scuba tank is not connected, but stretches to allow the passage of compressed gas when the gas valve 120, 20 is connected to the scuba tank. The use of a pinhole 157, 157 may offer certain designed advantages over the slit 156. For instance, the value of the predetermined activation pressure may be increased by using a pinhole rather than a slit.

Please amend paragraph [0038] as follows:

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[0038] FIG. 13 is a top view of the gas valve shown in FIG. 1[[1]]2.

Please amend paragraph [0064] as follows:

[0066] Referring to FIG. 7, in certain embodiments, the gas valve 120 does not include a gas conditioner 128. Alternatively, the gas conditioner 128 may be incorporated into the barrier 12[[2]]4. For instance, the barrier 122 may be formed of a material that acts both to keep water and other contaminants out of the gas valve 120 when the gas valve 120 is not connected to the scuba tank and to pass and filter compressed air flowing through the barrier 124 when the gas valve is connected to the scuba tank. In such embodiments, a single element performs the functions of both of the gas conditioner 128 and the barrier 124. Such a barrier may comprise, for example, a multi-layered structure with barrier and filter layers bonded together and arranged sequentially in an upstream-downstream direction.

Please amend paragraph [0066] as follows:

[0068] Referring again to FIGS. 5 and 6, the barrier 124 is preferably located at or near the upstream port 132 of the valve housing 122 and is also preferably at least partially contained inside the passageway 130. The barrier 124 may comprise any of the various types of material that are either waterproof or water resistant. The barrier 124 may comprise a rigid foam material or a rigid nonmetallic foam material. For example, the barrier 124 may comprise a material porous to compressed gas such as an expanded polytetrafluoroethylene (e.g., GORE-TEX™, which is available from Gore & Associates, Inc., of Newark, Del.; Latex, Neoprene, or polyurethane). In certain embodiments, the barrier 124 plastically deforms when exposed to compressed air, while in other embodiments, the barrier 124 will not plastically deform when exposed to compressed air. When a scuba tank is not connected to the gas valve 120 or when a scuba tank is

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connected, but with the tank valve closed, the barrier 124 prevents low-pressure liquids and other contaminants (e.g., those that are at or near atmospheric pressure) from entering the passageway 130 downstream ~~of~~ the barrier 124.

Please amend paragraph [0073] as follows:

[0075] In certain embodiments, such as that illustrated in FIG. 16, the gas valve 120 comprises a retainer 158 that is detachably coupled to the valve housing 122 and secures the barrier 124 within the passageway 130 or the valve housing 122. When attached to the valve housing 122, the retainer 158 preferably contacts at least a portion of the outside surface 159 of the barrier 124 so as to secure the barrier 124 to the valve housing 122. The retainer 158 preferably has an open portion that leaves at least a portion of the ~~upstream end~~ outside surface 159 of the barrier 124 exposed to the environment so as to allow compressed gas to flow through the barrier 124 when the valve 120 is connected to a pressurized gas source.

Please amend paragraph [0098] as follows:

[0100] In other embodiments, as illustrated in FIGS. 19 and 20, a method of providing air to a scuba diver comprises providing a gas regulator 170 with the inlet opening 186 and the movable cap 190, wherein the movable cap 190 is biased toward the first position 191 wherein the movable cap 190 covers the inlet opening 186 of the gas valve 120. The method further comprises connecting a source of compressed gas to the gas valve 120. The method also comprises connecting the source of compressed gas and moving the movable cap 190 to a second position wherein the movable cap 190 is displaced from the inlet opening 186. The method also comprises flowing compressed gas through the opening. The method also comprises conditioning the compressed gas to a condition wherein a human may breathe the gas.